DESIGN – BARRIERS
LOCATION, DESIGN, MANAGE

Lennon Peake, P.E.
Manager
Koffel Associates, Inc.
www.koffel.com
lpeake@koffel.com

OBJECTIVE

- Identify the different types of barriers used in health care facilities
- Identify the key characteristics for each barrier
  - Continuity
  - Protection of openings
- List at least three strategies that can be used to improve a barrier management program

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TYPES OF WALL ASSEMBLIES

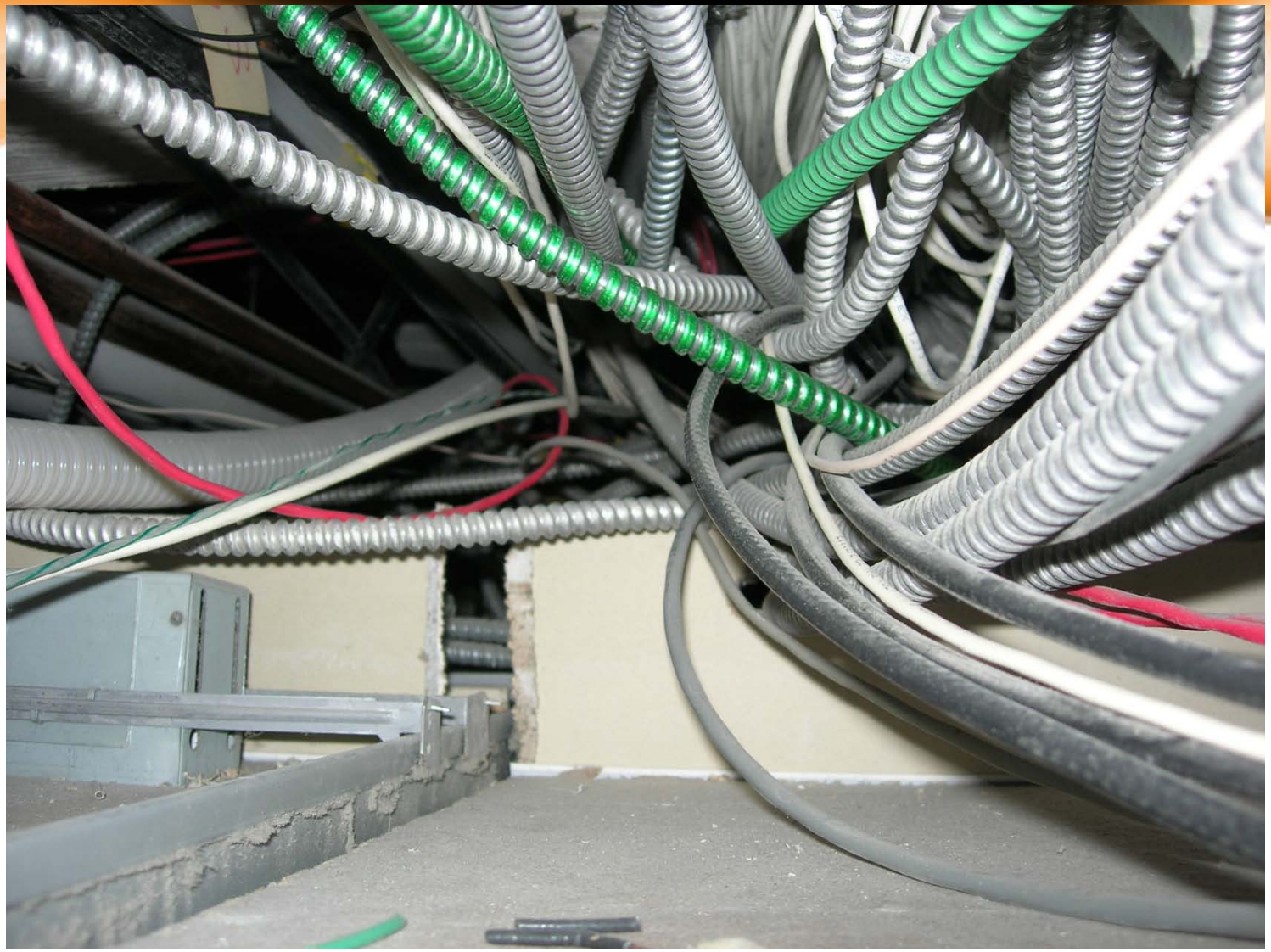
- Exterior walls
- Fire walls
- Fire barriers
- Fire partitions – No such assembly in NFPA
- Smoke barriers
- Smoke partitions

FIRE TESTED WALL ASSEMBLIES

- In accordance with ASTM E119/UL263
- Resist passage of heat and hot gases
- Structural integrity during the test fire
- Have something left at the end of the test

FIVE POINTS

- Required fire-resistance rating
- Continuity
- Openings and penetrations
- Types of materials
- Structural robustness



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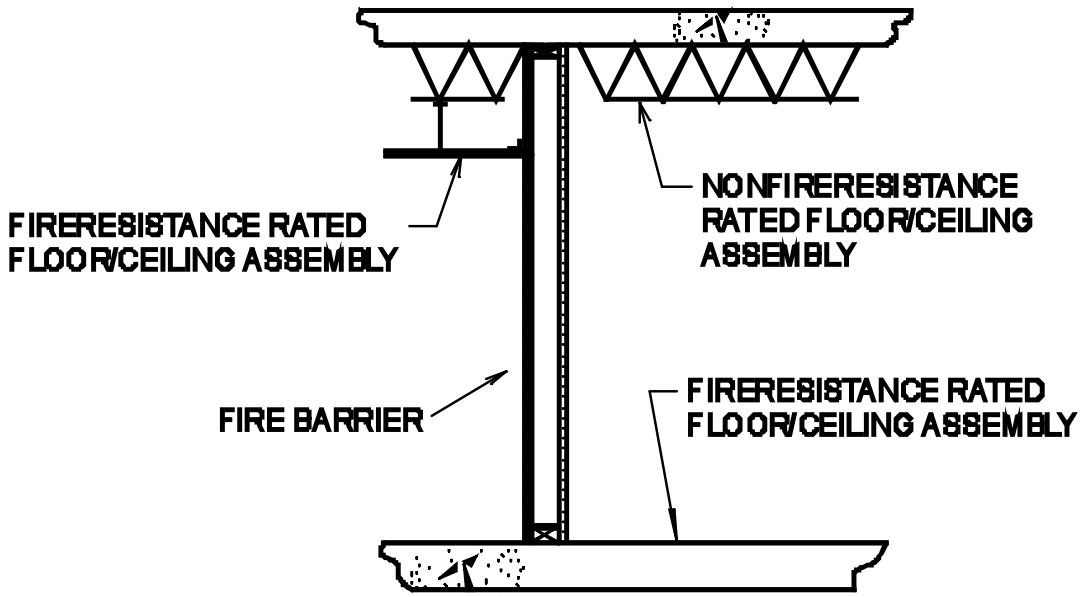
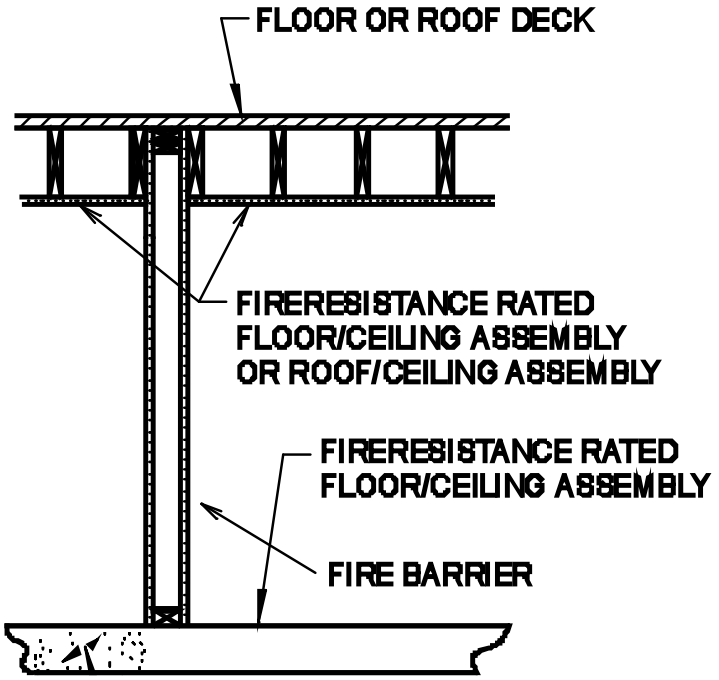
FIRE BARRIERS

- Fire barriers are used in the following applications:
  - Fire area separations
  - Mixed occupancy separations
  - Incidental use areas
  - Hazardous area separations
  - Exit enclosures
  - Shaft enclosures
  - Horizontal exits
  - Corridor walls – **NFPA only**

CONTINUITY


FIRERESISTANCE RATED
FLOOR/CEILING ASSEMBLY
NONFIRERESISTANCE
RATED FLOOR/CEILING
ASSEMBLY
FIRE BARRIER
FIRERESISTANCE RATED
FLOOR/CEILING ASSEMBLY


FLOOR OR ROOF DECK
FIRERESISTANCE RATED
FLOOR/CEILING ASSEMBLY
OR ROOF/CEILING ASSEMBLY
FIRERESISTANCE RATED
FLOOR/CEILING ASSEMBLY
FIRE BARRIER

SUPPORT

- Supported by construction with the same fire-resistance rating as the fire barrier
- Some exceptions
  - Vary between NFPA and ICC

SUMMARY OF FIRE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	Depends upon specific use
Required continuity	Floor/ceiling below to deck above
Openings	General: Aggregate glazing area (or width) <25% wall area/length; maximum size 120 sf. Specific: Rules based on use of barrier
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

FIRE PARTITIONS

- Fire partitions are used in the following applications:
  - Dwelling units separations
  - Sleeping units in Group R-1, R-2 and I-1
  - Tenant separation in covered malls
  - Exit access corridor walls
  - Elevator lobby separation
- Remember, NFPA does not use this phrase

SUMMARY OF FIRE PARTITIONS

Issue	Requirement
Required Fire-Resistance Rating	1 hour, with exceptions, depending on use. For corridors see Table in Chapter 10 – IBC only
Required continuity	Floor/ceiling below to deck above or tight to underside of fire-resistance rated assembly. Supported by fire-resistance rated construction, except in corridors, tenant, and guestroom separations in Types IIIB and VB construction
Openings	20 minutes (w/o hose stream) for corridors 45 minutes for all others
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

SMOKE BARRIERS

- Smoke barriers are used in the following applications:
  - Group I-2
  - Group I-3
  - Areas or refuge
  - Other specific applications

SUMMARY OF SMOKE BARRIERS

Issue	Requirement
Required Fire-Resistance Rating	1-hour with the exception that a construction of a minimum 0.1” thick steel in Group I-3 buildings is allowed
Required continuity	Horizontal: Outside wall to outside wall Vertical: Floor to slab or deck above, continuous through interstitial spaces Supporting construction may be required based upon the applicable codes
Openings	20 minutes – but not a true fire door in NFPA 101 Smoke- and draft-controlled doors tested in accordance with UL 1784 – IBC only
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

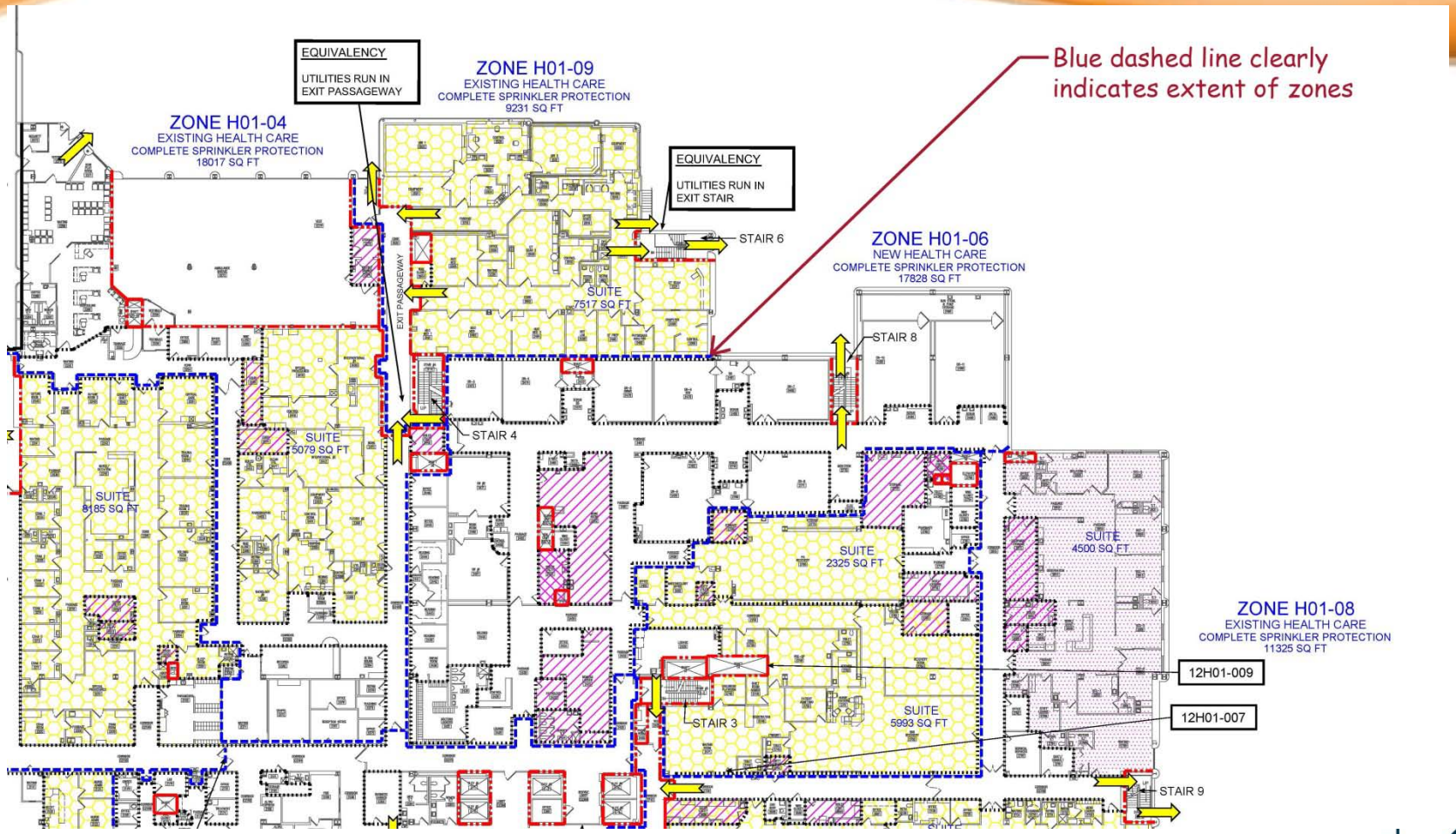
SMOKE PARTITIONS

- Smoke partitions are used in the following applications:
  - Corridor walls in Group I-2 – IBC only
  - Sprinkler protected hazardous areas – NFPA

SUMMARY OF SMOKE PARTITIONS

Issue	Requirements
Required Fire-Resistance Rating	Not required (unless otherwise required)
Required continuity	Floor/ceiling below to deck above or tight to underside of ceiling membrane in ceiling membrane designed to limit passage of smoke - Difference between NFPA/ICC for ceiling tiles
Openings	Windows: Sealed to resist free passage of smoke Doors: No louvers Air leakage rated (UL 1784) – IBC??? Self closing, or automatic closing by smoke detectors
Types of materials	As required for the type of construction
Robustness of structural system	If load bearing, fire tested with load

LS DRAWING INFORMATION



LS DRAWING INFORMATION

- A legend that clearly identifies features of fire safety
- Areas of the building that are fully sprinklered (if the building is partially sprinklered)
- Locations of all hazardous storage areas
- Locations of all rated barriers
- Locations of all smoke barriers
- Suite boundaries, including the size of the identified suites—both sleeping (max 5,000 sq ft) and non-sleeping (max 10,000 sq ft) – CMS Memorandum dated August 30, 2013
- Locations of designated smoke compartments
- Locations of chutes and shafts
- Any approved equivalencies or waivers

SUCCESSFUL STRATEGIES

- BUILD IT CORRECTLY
  - Thorough plan review process
  - Contractor qualifications
  - Commissioning systems and buildings
    - NFPA 3, NFPA 4, ASHE documents, pending ICC std.
  - Complete SOC documentation while contractor still on site
  - Use of certified inspectors or special inspectors

Intertek CFDI

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BUILD IT CORRECTLY!!

SUCCESSFUL STRATEGIES

- Make sure all rehabilitation work is done correctly
  - Refer to previous slides
- Above ceiling work permits
  - Means to identify “approved” individuals
- Proper identification
  - Labels
  - Marking
  - Life Safety Drawings


FIRE-RATED BAR
PENETRATION BY PERMIT ON

ADDITIONAL RESOURCES

- Visit www.koffel.com for links to a LinkedIn Life Safety Code Discussion Group

- NFPA
  - www.NFPA.org/###

- ASHE

ASHE justask 2013-2014 TEAM MEMBER

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QUESTIONS AND DISCUSSION